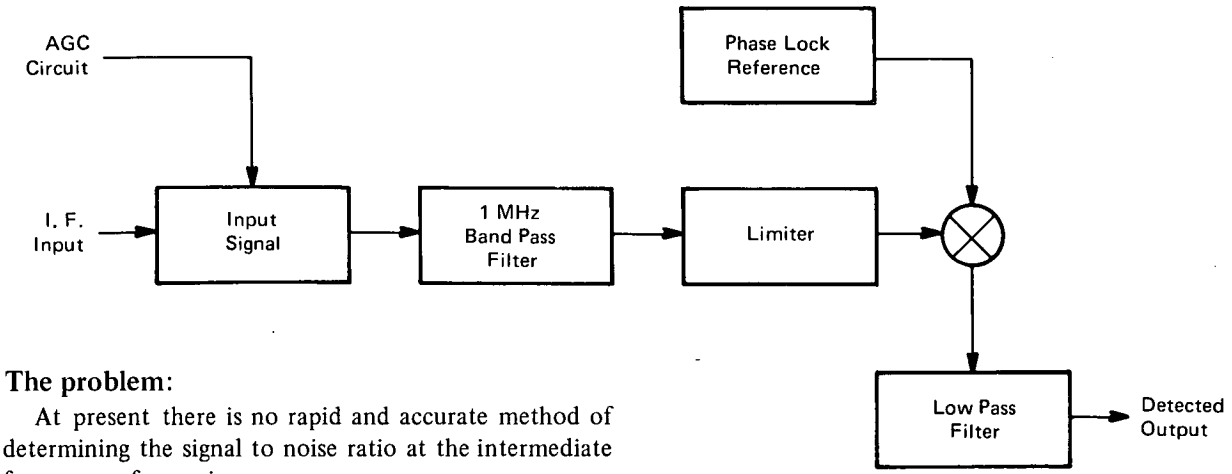
NASA TECH BRIEF

Goddard Space Flight Center

Signal to Noise Measurement Circuit



The problem:

At present there is no rapid and accurate method of determining the signal to noise ratio at the intermediate frequency of a receiver.

The solution:

A phase lock reference system provides a rapid and accurate method of determining the signal to noise ratio at the I. F. stage.

How it's done:

The circuit shown is a phase lock receiver with AGC control which maintains the signal level constant at the I.F. stage. This causes the noise to vary directly as the gain required to adjust the incoming signal level. By passing the I.F. signal plus noise through a limiter, the output signal from the limiter varies as a function of the I.F. noise level. The varying signal from the limiter is coherently detected since the input signals are phase locked to an internal reference. The phase lock reference mixing signal is clean; thus, the mixing process followed by a low pass filter gives a good measure of the varying signal level. This detected output is a measure of the input noise level to the limiter. From this, signal to noise ratio at the I.F. can be determined. This technique has application in providing optimum channel weighting in diversity receivers.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
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Reference: B72-10102

Patent status:

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